

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Application No. 09/116,589

REMARKS

Claims 28, 29 and 64 are all the claims pending in the application.

In response to the Amendment filed July 16, 2003, entered via the RCE filed September 16, 2003, the Examiner removed all of the previous claim rejections. The current status of the claims is the following.

Claims 28, 29, and 64 are objected to because the claims allegedly fail to provide structural and logical relationships among the various terms recited in the claims.

Claims 28 and 64 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly-cited Wreede et al. (US 5,499,118) in view of newly-cited Dausmann et al. (US 5,825,514) and previously-cited Moss et al. (US 5,016,953).

Claim 29 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Wreede et al. in view of previously-cited Hopwood (US 4,915,464), Dausmann et al., and Moss et al.

The Examiner asserts that it is not clear how the “hologram-recorded medium,” the “collection of pixels,” and the “plurality of volume type diffraction gratings comprising volume holograms” relate to the “photosensitive material” and the “interference fringes” of claims 28 and 29.

In response, Applicant amends claims 28 and 29 to more clearly relate the interference fringes, photosensitive material and pixels, by describing that the interference fringes are assigned to a particular part of the pixels as well as being recorded in the photosensitive material. FIGS. 14(a)-(c), 18(a)-(c), and 19 of the present application show exemplary embodiments of the claimed features. For example, FIG. 19 shows a hologram-recorded medium 101 comprising a collection of pixels 102 and interference fringes 103. As described in the present specification,

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Application No. 09/116,589

interference fringes correspond to diffraction gratings. See page 55, lines 23-24. FIGS. 14(a)-(c) provide a similar example of a hologram-recorded medium 101, including alternate views of the medium.

As recited in claim 28, the photosensitive material is used in the method to form the hologram-recorded medium. In the method, the interference fringes are recorded in the photosensitive material. Also, the diffraction gratings (interference fringes) are assigned to at least a part of the pixels. That is, first interference fringes produced from the first reflection type hologram are assigned to a first part of the pixels, and second interference fringes produced from the second reflection type hologram are assigned to a second part of the pixels. See FIG. 14(c). In light of the foregoing explanation and corresponding claim amendments, Applicant submits that the objections to the claims are hereby overcome.

Turning to the prior art rejections, Applicant has the following comments.

Applicant submits that the step of “replacing the first reflection type relief hologram with a second reflection type relief hologram ...” is not an obvious matter of design choice. Wreed et al. is directed to a technique for simultaneous copying of two holograms into a single hologram recording layer. There is no teaching or suggestion of modifying the hologram copy system disclosed in Wreed et al. to provide for replacing a first reflection type relief hologram with a second reflection type relief hologram as claimed in claim 28. Furthermore, the discussion of the background of the invention in the reference describes problems associated with “sequential exposures” of holograms. See col. 1, lines 25-36. In particular, the reference notes at col. 1, lines 29-36, that:

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Application No. 09/116,589

A consideration with successive exposures, however, is the requirement for more handling, and for DCG a change of shrinkage factor for the subsequent exposures. While non-overlapping adjacent holograms can be successively recorded in a photopolymer, surface distortion including a ridge and/or a trough occurs around each exposure area, which might not be amenable to removal by cutting.

Rather than solving the problems of sequential exposures of holograms, the invention of Wreede et al. is limited to simultaneous exposures of holograms.

In light of the foregoing problems with not performing simultaneous exposures and Wreede's failure to provide a solution to these problems within the framework of sequential exposures, Applicant submits that it would not have been an obvious matter of design choice to modify Wreede et al. to include the feature of claim 28 of "replacing the first reflection type relief hologram with a second reflection type relief hologram and striking reconstructing illumination light of the given wavelength on the second reflection type relief hologram through the photosensitive material, so that second interference fringes produced by interference of light diffracted from the second reflection type relief hologram and the incident light are recorded in the photosensitive material." Therefore, claim 28 and its dependent claim 64 are allowable over the prior art.

Claim 29 is allowable over the prior art for analogous reasons to those presented above for claim 28.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111

U. S. Application No. 09/116,589

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Cameron W. Beddar

Cameron W. Beddar
Registration No. 46,545

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: March 11, 2004